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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/526,173	03/15/2000	Isao Imamura	1714.0029	9971

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EXAMINER	
TUGBANG, ANTHONY D	
ART UNIT	**PAPER NUMBER**
3729	

DATE MAILED: 12/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/526,173	IMAMURA, ISAO	
	Examiner	Art Unit	
	A. Dexter Tugbang	3729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 October 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) *1-7* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *8-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Response to Amendment

1. The applicant's amendments filed on both 10/3/03 (Paper No. 17) and 9/22/03 (Paper No. 16), each have been fully considered and made of record.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Election/Restrictions

3. Claim 7 continues to stand as being withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 7.

4. Applicant's election with traverse of the invention of Group II, Claim 8 in Paper No. 15 is acknowledged. The traversal is on the ground(s) that the inventions of Groups I and II (in Paper No. 15) should be rejoined because many of the features of Claim 1 are identical to the features of Claim 8. This is not found persuasive because the features, which are not identical between Claim 1 and Claim 8, is what makes the inventions independent and distinct. These distinct features were pointed out in the previous Office Action (Paper No. 15) and the examiner maintains the restriction requirement between the two inventions.

The requirement is still deemed proper and is therefore made FINAL.

5. Claims 1-6 continue to stand as being withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 16.

Claim Rejections - 35 USC § 103

6. Claims 8, 9, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyagawa et al 5,458,254, referred to hereinafter as Miyagawa'254, in view of Miyagawa et al 5,331,344, referred to hereafter as Miyagawa'344.

Miyagawa'254 discloses a method of manufacturing an ink jet recording head comprising: preparing a base plate 1 having an ink ejection pressure generating element 2 (in Fig. 1) and a liquid path pattern 4, which is removable (see results of Figs. 6 and 7), located on a part of the base plate; with the use of a soluble resin (see col. 9, lines 50-55); applying a first active energy setting material (resin film 5) on the base plate and the liquid path pattern (see Fig. 3); applying an ink-repellent second active energy setting material (resist 6), which at some point is dry, on the first active energy setting material (see Fig. 4); exposing the first active and the ink-repellent second active energy setting materials in a process to expose both materials simultaneously corresponding to an ink ejection port (shown in Fig. 5); and developing the first active and the ink-repellent second active energy setting materials with an aqueous solution (see col. 16, lines 41-46) to form the ejection port 7 above the ink ejection pressure generating elements 2 (see Fig. 6).

Regarding Claims 9 and 11, Miyagawa'254 teaches that the ink-repellent second active energy setting material 6 is sprayed by fine particles of spin coating, which includes a drying process of either sputtering, vacuum deposition, or hardening through baking, to apply the ink-repellent second active energy setting material (see col. 11, lines 40-56) on the base plate.

Regarding Claim 12, Miyagawa'254 further teaches that the first active energy setting material 5 can include the composition of an epoxy resin (see col. 10, line 51 to col. 11, line 12).

Miyagawa'254 teaches substantially all of the limitations of the claimed manufacturing method except that the step of exposing is by applying light through a mask.

Miyagawa'344 teaches forming an equivalent liquid path pattern on a base plate 1 by exposing a first active energy setting material (photosensitive layer 3 in Fig. 5) and an ink-repellant second active energy setting material (photosensitive layer 5) by applying light simultaneously to both materials (see Fig. 3) through a mask 7 and afterwards developing the liquid path pattern 3 (see col. 12, lines 24-37). One such advantage of the above process provides for a liquid path pattern that has a high production yield (see col. 2, lines 10-14).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the exposing step of Miyagawa'254 by applying light through a mask, as taught by Miyagawa'344, to positively provide a liquid path pattern that has a high production yield.

7. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyagawa'254 in view of Miyagawa'344, as applied to Claim 8 above, and further in view of Chambers et al 4,429,027.

Miyagawa'254, as modified by Miyagawa'344, discloses the claimed manufacturing method as relied upon above, further including that the ink-repellent second active energy setting material 6 is a photoresist mask made from a silicon oxide composition (see col. 16, lines 13-15). However, the modified Miyagawa'254 method does not teach that the ink-repellent second energy active setting material is characterized by a flexographic printing method.

Chambers teaches a photoimaging process in which the photoresist or photomask is created directly on the surface to be processed, which simplifies the manufacturing process (see

col. 1, line 60 to col. 2, line 5). This photoimaging process is considered to be a flexographic printing method by including the formation of the photoresist or photomask as a flexographic printing plate (see col. 6, lines 24-32).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the ink-repellent second energy active setting material of Miyagawa'254 by utilizing it as a flexographic printing plate, as taught by Chambers, to achieve the same art recognized equivalents of exposing and developing the first active and the ink-repellent second active energy setting materials, which would simplify the overall manufacturing process saving production time and costs.

8. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyagawa'254 in view of Miyagawa'344, as applied to Claim 8 above, and further in view of Yasui et al 4,536,468.

Miyagawa'254, as modified by Miyagawa'344, discloses the claimed manufacturing method as relied upon above and further including that the ink-repellent second energy active setting material 6 is a photoresist mask made from a silicon oxide composition (see col. 16, lines 13-15). However, Miyagawa'254 does not teach that the second energy active setting material is an epoxy resin cured by cationic polymerization.

Yasui suggests that photoresists can comprise compositions of either silicon resins or epoxy resins, which are cationic, polymerized compounds (see col. 5, lines 39-53) and provide the advantages of having a photoresist pattern of a very high resolution (see col. 1, lines 4-19).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the second energy active setting material of Miyagawa'254 by

forming the material with an epoxy resin, as taught by Yasui, to positively provide a photoresist of second energy active setting material with a high resolution of patterning.

Response to Arguments

9. Applicant's arguments filed 9/22/03 (Paper No. 16) have been fully considered but have not been deemed to be found as persuasive.

In regards to the merits of the prior art, the applicants' contend that the prior art does not teach exposing the first active energy setting material and the ink-repellent second active energy setting material in a process by an application of light to both of the materials simultaneously through a mask corresponding to the ejection port for ink.

The examiner most respectfully traverses in that the above feature was relied upon in Miyagawa'344. Miyagawa'344 clearly shows a mask 4 and the application of light (in Fig. 5) in forming a liquid path pattern and subsequently developing both materials for the advantages discussed above. The exposure processes of both Miyagawa'344 and Miyagawa'254 are each to form art recognized equivalent ink-jet heads.

It is noted that element 7 of Miyagawa'254 can be read as an equivalent "ejection port" because the ink, during operation of the head, has to travel through element 7 to be ejection. Furthermore, the plasma etching of Miyagawa'254 is a form of exposing and developing without the application of light and Miyagawa'344 teaches an alternative form of exposing and developing with the application of light.

The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed

invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Dexter Tugbang whose telephone number is 703-308-7599. The examiner can normally be reached on Monday - Friday 7:00 am - 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 703-308-1789. The fax phone numbers for the

organization where this application or proceeding is assigned are 703-872-9302 for regular communications and 703-872-9303 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0858.

A. Dexter Tugbang
Primary Examiner
Art Unit 3729

December 15, 2003